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TRANSITION AND THE FISCAL CRISIS IN CENTRAL EUROPE

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ABSTRACT

This paper argues that traditional explanations of the fiscal crisis in transition economies overlook the crucial interconnection between the reduction in subsidies expenditure and the decrease in profit tax revenues. It thus contends that the impact on the fiscal budget of the crisis of state-owned enterprises profitability has been largely overestimated in the literature. The net contribution to the government budget from the enterprise sector - defined as *profit taxes net of cross-subsidization* - has *increased* during the transition in Poland and Czechoslovakia, and has remained constant in Hungary. After reexamining the data, it is argued that - while it is undoubtable that the prospects for fiscal revenues are worrisome - the main determinant of the fiscal crisis is to the explosion of social security expenditures. The paper also assesses the applicability of these results to other former socialist economies.

Keywords: Poland; Hungary; Czechoslovakia; Eastern Europe; Socialist economies; economic transition; fiscal crisis; revenue crisis; social expenditures; pensions.

I. INTRODUCTION

A stylized fact for virtually all reforming ex-socialist economies (RESEs) is the deep fiscal crisis experienced after the onset of the liberalization programs (see Table 1). To a certain extent the emergence of a fiscal crisis should not be surprising, since almost all the reforming economies also experienced, at least during 1990-91, considerable output losses, of a magnitude not previously seen in market economies. Inasmuch as automatic stabilizers were built into the structure of the socialist public sector (at least on the revenue side), one should have expected that the recession would be accompanied by a large swing in fiscal balances. But, as several authors have pointed out, there are more serious, structural reasons underlying the crisis, which require the policy-makers' attention (see Tanzi 1991 and 1993b). The following factors are commonly cited.

Table 1. Selected Economies in Transition: General Government Balance
(percentage of GDP)

	1989	**1990**	**1991**	**1992**	**1993**
Albania	-8.6	-15.4	-30.6	-22.6	-16.0
Bulgaria	..	-8.5	-4.1	-5.0	-9.2
former Czechoslovakia 1/	-2.4	0.1	-2.0	-3.6	-0.3
Hungary	-1.3	0.5	-2.5	-8.0	-6.0
Poland	-5.8	3.2	-6.5	-6.7	-2.4
Ukraine 2/	-	-	-13.6	-27.8	-16.3
Russian Republic 2/ 3/	-3.1	-6.3	-16.0	-6.9	-5.7
Belarus 2/	-	-	3.7	-6.4	-8.4

Sources: Ministries of Finance; World Bank and IMF estimates.

1/ The figure for 1993 is the GDP-weighted average of fiscal deficits of Czech Republic and Slovakia.

2/ Data on general government accounts in former Soviet Union countries are highly controversial, and need to be taken with extreme caution. See for example Le Houerou et al. (1994).

3/ Figures prior to 1991 refer to the USSR.

On the revenue side, the traditional tax base of RESEs was the state-owned enterprise (SOE) sector. The sector has borne the main brunt of the recession, driving down tax collection, and is likely to further lose relative importance in the economy, as privatization advances and industry is downsized. The lost traditional tax base cannot easily be replaced by increasing contributions from other sectors, since either these are traditionally difficult to tax (some services, small businesses), or the administration is not prepared to implement the new tax laws that are approved by the legislature.

On the expenditure side, despite the relief provided by sharp cuts in government subsidies, the central government is burdened with many of the social costs of adjustment, previously hidden within the SOE system. These include, in addition to unemployment benefits likely to be high for a number of years, the cost of supporting, either through the pension system or the social assistance system, the people displaced from the work-force by the transformation. In addition, the switch to positive real interest rate policies, together with the emergence of large deficits and non-bank financing of the budget, has led to increasing debt-service pressures.

This paper argues, however, that a crucial interconnection between reduction in subsidy expenditures and decrease in profit tax revenues has been overlooked, and that, at least for a number of Central European countries for which relatively good data is available, overall revenues have shown a remarkable resilience. The fiscal crisis, where it has occurred, appears to have largely been an expenditure phenomenon.

The paper is organized as follows. In the next section, after reviewing the implications of transition on the fiscal budget, we discuss a simple two-sectors model of profit tax revenues and subsidy expenditure in a transition economy. In the third section, we present evidence from Poland, Hungary and former Czechoslovakia. In section four we focus on some elements of the increase of social spending, and provide some selected evidence on the topic. In the fifth section, we assess how far our findings can be generalized to other transition economies in Eastern Europe and the former Soviet Union.

II. PROFIT TAX REVENUES AND SUBSIDY EXPENDITURES IN A TRANSITION ECONOMY

The fiscal crisis associated to the early stages of economic transformation is no longer a matter of dispute[1]. On the expenditure side, the transition to market brings deep cuts in producer and consumer subsidies, as well as a dramatic surge in transfers to households. The cut in subsidies is a crucial part of any liberalization package. The rapid expansion of the social security system - in all its components: unemployment benefits, social insurance, social assistance - is also directly related to the economic transformation process. Four years of reforms, however, suggest that earlier expectations about the evolution of social expenditures failed to size appropriately the magnitude of the problem. In particular, as we discuss below, the expected surge in recession-related benefits has been more than overwhelmed by the use that has been made of the pension system as an absorber of surplus labor previously hidden in the SOEs. Furthermore, the switch to a

[1] A comparative analysis of the functions of public finance in market and planned economies can be found in Barbone and Marchetti (1994). There, and in a textbook fashion in Tanzi (1992 and 1993a), one can also find a discussion of the effects of transition on the fiscal budget.

market economy brings about increased expenditure related to the need to make quasi-fiscal deficits previously hidden in the banking sector an explicit budget item[2].

On the revenue side, most observers agree that a sizeable decrease in tax revenues could be expected to accompany economic transformation of socialist countries (see, for example, Tanzi, 1991, and Stiehler, 1993), due to several factors. A tax administration must be built almost from scratch, to be able to cope with the complex tax collection problems which arise in a market economy. Achieving the administrative capability of successfully implementing the new legislation, and properly taxing the private enterprises, will take time. Meanwhile, a large part of the income produced in the newly emerging activities will be taxed to only a limited extent, if any. The most important factor stressed by almost all studies of fiscal aspects of transition, however, is the decline of profitability in the public enterprise sector during transition, and the corresponding decline in profit tax payments (see, for example, Stiehler, 1993). Several explanations for the fall of profits are documented in the literature[3]. In general, there is a wide consensus that, although some success cases do exist (see Pinto et al., 1992, on Polish SOEs), the overall performance of the public enterprise sector has considerably worsened during transition.

But in a socialist system, SOEs profits tell only one side of the story of enterprises performance. SOE performance - and profitability - are in fact closely interconnected with cross-subsidization, a fact which needs to be given due consideration in the analysis. However, although the cut in subsidies during transition has been widely acknowledged in the literature, its consequences on the SOEs profitability - and, therefore, profit tax payments - have been surprisingly disregarded.

In a planned economy profit tax revenues and subsidy expenditures are linked to each other through relative prices, which are administratively set by the planner. Through the pursuit of some of his objectives -- inexpensive food for the population, or cheap raw materials for strategic industries -- the central planner favors some industries at the expense of others: relative prices are chosen that penalize the latter and artificially promote the financial performance of the former. The fiscal outcome is a combination of inflated profit tax revenues from "good" enterprises, and equally inflated subsidy expenditures to cover the losses of the less fortunate enterprises. After price liberalization and the adjustment of relative prices, gross profits will be smaller, but so will gross losses. From the fiscal point of view, profit tax revenues decrease, but so do subsidy expenditures. Whether the net flow from enterprises to the government budget decreases or increases depends on a number of factors. However, economic logic would suggest that, in general, moving from a situation

[2] This point has been stressed by many, particularly inasmuch as it implies that, at the early stages of the economic transformation, targeting the fiscal deficit may not be very meaningful (Bruno, 1992, and Tanzi, 1993; see also Schwartz et al., forthcoming).

[3] The single most important factor is the recession that accompanied the reforms (see Ko_odko, 1993, for a taxonomy of post-reform fiscal stages). Other common explanations of the fall of SOEs profitability include the disappearance of windfall profits due to hyperinflation and historical costs accounting, higher costs of energy and other imported production goods,and management's inability to deal with the new system (see, for example Schaffer, 1992, Schwartz et al., forthcoming, and Bruno, 1992).

with highly distorted relative prices (and resource allocation) to one with market-determined relative prices, the net fiscal position of enterprises should improve, for at least two reasons. The first is that resources are used more efficiently in the economy (and therefore profits net of losses should be higher, and yield more profit tax revenues). The second is that the budget receives only a fraction of enterprise profits, whereas it usually ends up covering the whole amount of losses.

A simple two-sector model can be useful to capture, within a basic analytical framework, the above features of public finance in a transition economy.

The transition economy of our model has two sectors, which produce, respectively, good x and y. We can think of x as a consumer good, and y as a good which can be both consumed and used as intermediate input for producing x.

Two enterprises, one in each sector, produce all the goods in the economy. We pursue a short term analysis, and can therefore quite reasonably assume that capital is fixed in both sectors, the intermediate good y is used to produce x in fixed proportions, and substitutability between labor and the intermediate input is limited. While these assumptions are made for the sake of simplicity, they do not affect the substance of our results. We therefore have the following short-term production functions:

$$x = \min [\, Al_x^{\alpha} , y_x \,] = \min [\, Al_x^{\alpha} , a_{xy} x] \qquad (1)$$

and

$$y = Bl_y^{\beta}, \qquad (2)$$

where l_x and l_y are, respectively, the amount of labor used to produce x and y, y_x is the amount of good y used to produce good x, and a_{xy} is the (fixed) number of units of y needed to produce one unit of x.

Taxable operating margins (which include here both return to capital and "pure" profits, if any) can be defined in each sector as:

$$\pi_x = x - wl_x - pa_{xy}x \qquad (3)$$

and

$$\pi_y = py - wl_y , \qquad (4)$$

where p is the price of y, and w is the wage rate, both expressed in terms of x.

We assume that the level of production, as well as the real wage w, are set exogenously by the central planner. Profits in both sectors are therefore function of the relative price p, and their schedule is shown in the left-side diagram in Figure 1 below. Simple algebra reveals that π_y is an increasing function of p, and π_x is inversely correlated (for details, see the Appendix).

Enterprises pay taxes on their operating margins, if they are positive. If they are negative (losses), they receive subsidies from the government for the whole amount. Total profit tax revenues T and subsidy expenditures S are therefore defined as follows:

$$T = \tau\,[\max(\pi_x, 0) + \max(\pi_y, 0)] \quad (5)$$

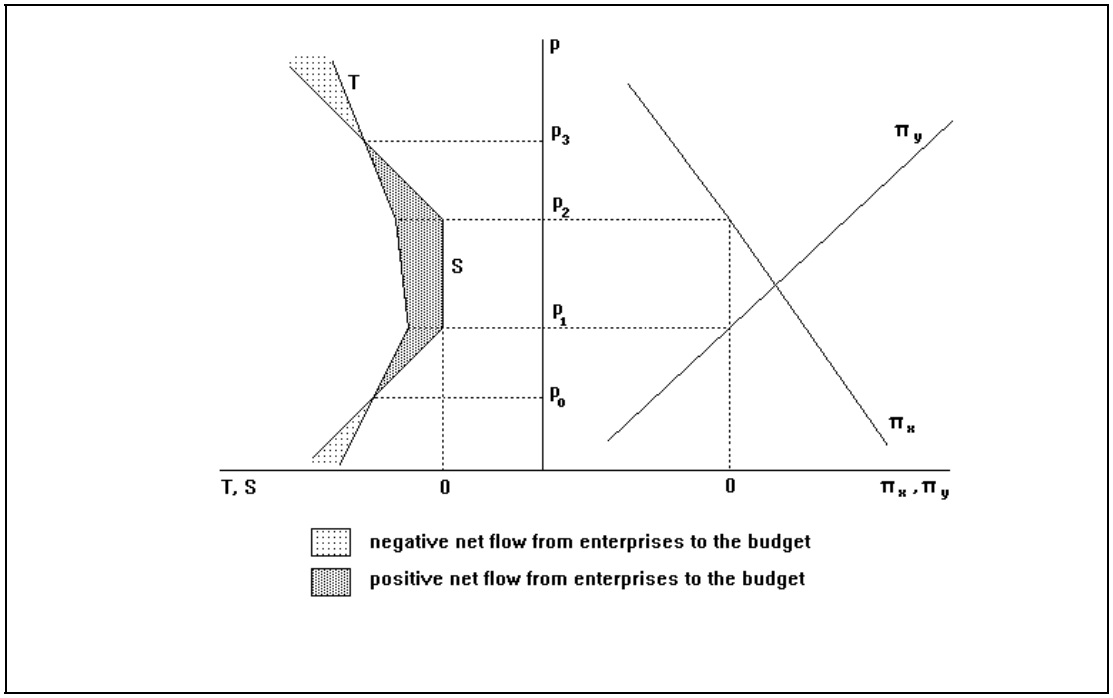
and

$$S = -\,[\min(\pi_x, 0) + \min(\pi_x, 0)], \quad (6)$$

where τ is the tax rate, and $0 < \tau < 1$.

Total profit tax revenues T and subsidy outlays S can be also expressed as function of the relative price p, given x, y and w. Their schedule is shown in the left-hand side of Figure 1.

As illustrated by the diagram, there is a price range (p_1, p_2) in which both industries have positive operating margins. This price range will include the market-determined relative price, if the given levels of x and y can be supported as competitive equilibrium quantities by some price vector. Within this range there is a positive net flow from each enterprise to the government budget: profit taxes are paid, no subsidies are required.



As the central planner moves the relative price away from the "market equilibrium", the profitability in the two industries will be affected in opposite directions. One industry will enjoy larger profits, while the other will begin to incur losses. The fiscal implications, which we want to highlight in this paper, are as follows. As prices become more distorted, one of the two industries will record negative operating margins and will require subsidies from the government. For a given price range (i.e. $p_3 > p > p_2$ or $p_1 > p > p_0$) the subsidies paid by the government to the loss-making industry are lower than profit tax revenues from the other industry: the net flow from the enterprise sector remains positive, albeit shrinking. However, as relative prices become more distorted - i.e., p is either greater than p_3 or lower than p_0 - subsidy outlays cannot be covered by profit tax revenues, and there is a negative

flow from the enterprise sector to the budget. Notice, however, that although the net flow to the government may become negative, *gross* flows will keep increasing.

What are the implications of this simple model for the fiscal accounts in the transition? To the extent that liberalization brings the relative price vector towards the market-determined equilibrium within the (p_1, p_2) range, two opposite phenomena will be observed: overall gross profitability will decline, bringing about lower profit tax revenues. But subsidies also will decline. The change in the net position of the enterprise sector *vis-a-vis* the government will be the result of the combination of these two factors. In this simple model, the presumption is that the government will always benefit from the transition. In reality, naturally, one would need to temper the results of the model with the probable fall in output (as discussed) and the changes in real wages that are likely to accompany the price liberalization. Nevertheless, the elimination of the "duplication effect" just described may be sufficiently important as to produce a distorted picture of the evolution of the fiscal accounts. In the next section we will see that, based on data from the three countries considered here (and indeed from other transition economies as well, see section five) this appears to be indeed the case.

III. A TRADITIONAL AND AN ALTERNATIVE VIEW OF THE FISCAL CRISIS: EVIDENCE FROM POLAND, HUNGARY AND CZECHOSLOVAKIA.

How important is the disappearance of the "duplication effect" just discussed in explaining the emergence of the fiscal crisis in Central Europe? In this section, we offer evidence from Poland, Hungary and the former Czechoslovakia. We first present general government data according to the traditional classification used in the study of the fiscal crisis in transition economies. This presentation naturally leads to emphasize the strong decline in fiscal revenues as the main culprit for the fiscal crisis. In a nutshell, deep expenditure cuts, particularly on the subsidy side, have been insufficient to counteract the ruinous decline in income tax payments from enterprises (mainly SOEs).

We then provide a somewhat different presentation of the same data, aimed at capturing the essence of the discussion in the preceding section: the profit tax decline observed during the transition is ephemeral. In order to show this, as explained above, we adopt the concept of *net contribution* of the SOE sector to the budget, defined as profit taxes net of producer subsidies. The periods considered are 1986-88 (or 1985-87 for Poland) and 1991-92, chosen to be as representative as possible, for each country, of the fiscal performance under the two distinct regimes[4].

[4] In Poland, for example, the data for 1989 and 1990 are highly distorted by two phenomena that make their interpretation hopeless: the hyperinflation of 1989 and the subsequent increase in paper profits in enterprises in 1990 (see Barbone, 1992 and Schaffer, 1992; see also Gomulka, 1994). However, the substance of our results is not altered by considering different periods.

III.1. The Traditional View of the Fiscal Crisis

Although the direct and indirect budgetary consequences of transition are numerous and complex, the heart of the matter, according to the "traditional" view, seems to be as follows (see table 3.1).

The general government balance deteriorated considerably between the two periods considered in both Poland and Hungary, and only modestly in Czechoslovakia. This deterioration is the result of similar trends in revenues and expenditures. During the period under consideration, government revenues decreased considerably in all countries, by as much as 8-12 percent of GDP. The main cause of this drastic fall seems to be the collapse of tax revenues from public enterprises. Tax collection from both private enterprises and individuals increased, but far less than necessary to offset the former impact.

On the expenditure side, the increase in transfers to households - by 5-11 percent of GDP - was more than offset by the cut of subsidies - by 11-19 percent of GDP - so that overall total government expenditures *decreased* - by 4-11 percent of GDP. However, the reduction of government revenues was too large to be offset by the decrease in government expenditure, particularly in Poland and Hungary. Hence the emergence of the fiscal crisis. This can be considered the heart of the "traditional" approach to fiscal crisis during transition in Poland and Hungary.

Table 3.1. Poland, Hungary and Czechoslovakia: Evolution of Deficit , 1986-1992.
(percent of GDP, average over specified years)

	Poland			Hungary			Czechoslovakia		
	1985-87	1991-92	Change	1986-88	1991-92	Change	1986-88	1991-92	Change
General Govt. Balance	-0.4	-5.4	-5.0	-2.2	-5.3	-3.0	-1.7	-2.8	-1.1
Revenues	48.2	41.3	-6.9	61.3	53.3	-8.0	64.6	52.8	-11.9
Profit taxes	11.1	5.8	-5.3	10.5	4.0	-6.5	18.6	12.7	-5.8
Turnover Taxes 1/	11.5	7.2	-3.3	17.3	13.4	-4.0	15.8	12.7	-3.1
Expenditures	48.5	46.6	-1.9	63.5	58.6	-5.0	66.4	55.6	-10.8
Transfers to H'holds	9.9	19.7	9.9	13.7	24.4	10.7	11.8	16.3	4.4
Subsidies	16.2	5.0	-11.2	15.6	5.6	-9.9	26.3	7.9	-18.5
Interest	0.9	2.2	1.3	1.8	3.9	2.1	0.0	0.8	0.8
Capital Expenditures	5.3	3.0	-2.3	8.0	6.3	-1.7	2.0	4.9	2.9

Sources: Ministries of Finance; World Bank staff estimates.
1/ In Hungary it includes VAT.

In Czechoslovakia, on the other hand, the decrease in government expenditure was larger than in Poland and Hungary, and it almost matched the decrease of government revenues. This was mainly due to the lower increase in transfers to households. Such transfers account for a large fraction of government spending in all countries, and they almost doubled in size - relatively to GDP - in Poland and Hungary, while they rose by less

than 40 percent in Czechoslovakia. We will return to this issue, which, as we argue, is the single most important factor behind the fiscal crisis in transition economies.

III.2. An Alternative View of the Fiscal Crisis.

The traditional view of the fiscal crisis cannot be faulted for attributing a large share of responsibility to the SOE performance. On the face of it, profit tax revenues collapsed in Poland from 11 percent of GDP in 1986 to 4.5 percent in 1992, in Hungary from 11 percent of GDP to 2 percent, and in Czechoslovakia from 18 percent to 12 percent (figures are rounded to unity; the data on the consolidated fiscal accounts of the three countries are available from the authors on request)[5].

The raw figures, impressive as they are, should be reinterpreted according to indications provided by the simple model discussed above, that argues that the fall in profitability is in itself largely attributable to the fall in subsidies. The reduction in subsidies in the three countries has indeed been dramatic. They decreased in Poland from about 16 percent of GDP in 1986 to 3.6 percent of GDP in 1992, in Hungary from 17 percent of GDP to 4 percent, and in the former Czechoslovakia from 25 percent to 7 percent. Even more strikingly, virtually all the cuts took place in only three years in Poland (1989-1991) and two years in Czechoslovakia (1990-1991), showing the early determination of these governments to get rid of the old economic system. The process in Hungary has been somewhat more gradual, with the cuts spread evenly over 1987-1992. The distribution of the few remaining subsidies varies across countries[6].

In order to capture the essence of the simple model presented in section II, we reclassify fiscal data as follows. We obtain "net profit taxes" by subtracting producer subsidies from profit tax revenues. Analogously, we obtain net total revenues and net total expenditures - i.e., net of cross-subsidization. Table 3.2 presents the resulting decomposition of the change in the general government deficit.

The deterioration in the general government balance during the period is thus unchanged: 5 percentage points of GDP in Poland and 3 percentage points in Hungary. However, this deterioration can now be evenly decomposed into a *decrease* in net revenues (which fell between 0.4 and 3.1 percent of GDP) and an *increase* in net expenditures for Poland and Hungary (4.5 and 1.4 percent of GDP, respectively). The former

[5] Data on profit tax and turnover tax refer to, respectively, Enterprise Income Tax and VAT, for the countries/years in which they have been replaced by the latter.

[6] These are mainly consumer subsidies in Poland (including subsidies on housing), and producer subsidies in Hungary and Czechoslovakia. A major category of consumer subsidies in all three countries - almost entirely eliminated by the reforms - used to be on food products. Major categories within producer subsidies included subsidies on energy and intermediate goods. Of course, the subsidies shown in the fiscal budget are not the only ones in the economy. "Cheap" loans, specific contracts between enterprises and the government and some government regulations can all - under certain circumstances - be considered implicit subsidies. This is one of the arguments used to criticize the fiscal deficit as a measure of macroeconomic efficiency (see Tanzi, 1993b, and Schwartz et al., forthcoming).

Czechoslovakia, on the other hand, also sees a decrease in net expenditures, resulting in a worsening of the fiscal deficit of only one percentage point of GDP.

Table 3.2. Poland, Hungary and Czechoslovakia: Evolution of Deficit - An Alternative Decomposition, 1986-1992. (percentage of GDP, average over specified periods)

	Poland			Hungary			Czechoslovakia		
	1985-87	1991-92	Change	1986-88	1991-92	Change	1986-88	1991-92	Change
General Govt. Balance	-0.4	-5.5	-5.0	-2.2	-5.3	-3.0	-1.7	-2.8	-1.1
Net Revenues	41.1	40.6	-0.5	51.6	50.0	-1.6	49.5	46.4	-3.1
Net profit taxes	4.0	5.1	1.1	0.7	0.7	0.0	3.5	6.4	2.9
Turnover Taxes	11.5	8.2	-3.3	17.3	13.4	-4.0	15.8	12.7	-3.1
Net Expenditures	41.5	45.9	4.5	53.8	55.2	1.4	51.3	49.2	-2.1
Transfers to H'holds	9.9	19.7	9.9	13.7	24.4	10.7	11.8	16.3	4.4
Consumer Subsidies	9.1	2.9	-6.3	5.8	2.3	-3.5	4.1	0.0	-4.1
Interest Payments	0.9	2.2	1.3	1.8	3.9	2.1	0.0	0.8	0.8
Capital Expenditures	5.3	3.0	-2.3	8.0	6.3	-1.7	2.0	4.9	2.9

Sources: Ministries of Finance; authors' estimates.

It is worth stressing that the decline in net revenues common to the three countries is due to altogether different reasons than the ones seen in table 3.1. The most important fact emphasized by table 3.2 is in fact that the *net* contribution of the enterprise sector to the fiscal budget has *increased* during transition, by 1.1 percent of GDP in Poland and by almost 3 percent in Czechoslovakia and has remained unchanged in Hungary. *Despite the shrinkage in the tax base due to the recession, therefore, the transition process - with price and other liberalization measures - appears to have benefitted general government revenues, at least in their direct relation with the enterprise sector.*

The main factor underlying the decline in revenues (after accounting for the disappearance of the duplication effect), was - in all countries - the decline of turnover taxes, which fell by 3-5 percent of GDP. In Poland, such decrease is partially due to the fact that the prices of the goods which account for most of the tax revenue - spirits, petroleum product and tobacco - have not kept pace with the inflation rate, particularly in 1989 and 1990. Collectability issues also played a role, as delays in the payment of the tax increased sharply in those same years[7].

The reclassification of the data in table 3.2 has also the advantage of pointing out the explosive behavior of social security expenditure, which is overshadowed in more traditional approaches by the deep cut of subsidies. Indeed, government expenditure other than producer subsidies has increased significantly in Poland and Hungary, mostly on

[7] See Bolkowiak (1993). In 1989, for example, collection orders ceased to be applied to tax charges, weakening the enforcement of tax collection.

transfers to the population[8]. Such increase seems to have gone beyond the government's intent of offsetting the negative distributive effects of the cut in subsidies (see next section). It is in this sense that we suggest that, although the future performance of fiscal revenues is a matter of serious concern, the fiscal crisis in central Europe has been so far more *an expenditure, than a revenue phenomenon.*

IV. ELEMENTS OF THE SOCIAL SPENDING CRISIS

This section reviews some elements of the increase of social security expenditure in the three countries. Rather than attempting a comprehensive analysis of the topic, we provide some selected pieces of evidence, which we believe can help to capture some of the main factors at play.

Social security outlays provide the bulk of general government expenditures in transition economies. In 1992, they accounted for almost half of total expenditures in Poland and Hungary, and for about 30 percent in Czechoslovakia. They increased as share of GDP from 1986-88 to 1991-92 by about 80 percent in Hungary and 90 percent in Poland, but by less than 40 percent in Czechoslovakia. In 1986, the share of GDP spent on social security in Czechoslovakia was higher than in Poland, and very close to that in Hungary. In 1992, the same figure in Czechoslovakia was by several percentage points lower than the corresponding ones in both Poland and Hungary.

Table 4.1. Poland, Hungary and Czechoslovakia: Recipients of Pensions (Thousands), 1987-93.

	1987	1988	1989	1990	1991	1992	1993
Poland	6,477	6,669	6,827	7,104	7,944	8,495	8,730
(growth rate)	2.8	3.0	2.4	4.1	11.8	6.9	2.8
Hungary	2,374	2,422	2,477	2,556	2,680	2,797	2,870
(growth rate)	1.6	2.3	2.0	3.1	4.9	4.4	2.6
Czechoslovakia 1/	4,057	4,066	4,149	4,210	4,297	4,317	..
(growth rate)	0.9	0.2	2.0	1.5	2.1	0.5	2.1

Sources: Biuletyn Statystyczny and Rocznik Statystyczny, several issues; Statisticka Rocenka 1989, 1990 and 1992, and Czech Republic Bureau of Statistics; Statistical Yearbook of Hungary, 1993.

1/ The growth rate for 1993 is for Czech pensioners only.

[8] In fact, one could define the "net contribution" of the household sector in fashion similar to that defined for the SOE sector. Although there are some methodological problems (since the introduction of the personal income tax makes pre- and post-liberalization comparisons difficult), the data would show an increase in net payments to the household sector even when the effect of the reduction of direct subsidies to households is taken into account.

To some extent, the increase in social security spending was a necessary consequence of transition, as the reaction to new conditions of a labor force whose employment rate was unusually high for western standards[9]. However, the data for Poland and Hungary - particularly if compared to Czechoslovakia - suggest that the system has been stretched somewhat beyond its institutional functions, in order to absorb some of the social distress brought by the transition. The main data are summarized in Tables 4.1 and 4.2.

In Hungary, the annual growth rate of the number of pensioners in 1991 and 1992 was respectively twice and three times higher than in 1987-88.

Even more revealing are the figures for Poland. In this country, the number of pensioners increased by almost 28 percent in the period 1990-93, whereas annual growth rates had ranged between 2 and 3 percent in previous years. Some disaggregated data are also quite impressive. For example, the number of old age non-farmers pensioners increased by 18 percent in 1991, after increasing by average by only 1 percent per year in the period 1986-1990. Although the extended use of retirement and disability pensions reached its peak in the aftermath of the reforms (1990-91), it still continued to a significant extent in 1992.

These developments are closely interconnected with the massive process of labor force reallocation and reduction that has taken place in Poland after 1989. Between 1989-92, employment in state-owned enterprises decreased by as much as 40 percent, and employment in the public sector -SOEs and general government - by almost 30 percent. Overall, employment in Poland fell by 12 percent in the period 1989-92. In response to that, unemployment benefits - which did not exist in 1986 - increased to almost 2 percent of GDP in 1992. However, given the size of the phenomenon, the burden of absorbing the reduction in employment spilled over to the rest of the social security system.

This spill-over was made possible by a combination of liberal legislation and loose application of the existing rules. The main factors - common to other transition economies - include generous eligibility conditions for early retirement and disability pensions, and high replacement ratios. As argued by Maret and Schwartz (1992), the social insurance system seems to have played a role, at least to some extent, that should have been assigned to social assistance programs and other proper safety net provisions.

The picture is rather different in the former Czechoslovakia. Formal employment there decreased by about 12 percent during 1989-92, a figure comparable to Poland. However, the unemployment rate remained much smaller, at 6.6 percent in 1991 and 5 percent in 1992 (it was 13.6 percent in 1992 in Poland). This would suggest that the pressure on the social security system might also have been very high; nevertheless, the outcome in terms of number of new pensions was very different than the one just seen for Poland. While the growth rate of disability pensions - which had been stable in previous years - more than doubled in 1990 and increased by another 60 percent in 1991, the overall

[9] We thank one referee for pointing this out to us.

numbers remained considerably below Poland and Hungary - in the former, for example, the annual growth rate of total non-farmers pensions increased in 1991, one year after the reform, by more than 400 percent, compared with the average annual growth rate in 1986-90. On the whole, inflows into the pension system in Czechoslovakia after 1990 diverged very little from the long-term trends that had prevailed until then.

The different outcome is probably explained by differences in the social security legislation across the countries, as well as the administrative application of the existing rules. A detailed analysis of such differences is outside the scope of this paper, although the relevance of such study is enhanced by our results.

Table 4.2. Poland, Hungary and Czechoslovakia: Real Average Pension, 1986-92.

	1986	1987	1988	1989	1990	1991	1992
Poland	95.8	100.0	101.4	105.6	92.3	103.1	94.4
Hungary	99.5	100.0	100.7	101.4	98.8	91.4	82.4
Czechoslovakia 1/ 2/	..	100.0	104.2	117.6	107.5	80.0	71.2

Source: Biuletyn Statystyczny and Rocznik Statystyczny, several issues; Statisticka Rocenka 1989, 90 and 1992, and Czech Republic Bureau of Statistics; Statistical Yearbook of Hungary, 1992.

1/ Data refer to old age pensions only.

2/ Czech Republic only (which, however, accounted for about three fourths of CSFR pensions).

A final remark is the following. The moderate increase in social spending in the former Czechoslovakia seems to have been achieved - to some extent - also through important cuts in pensioners' living standards. The real average pension decreased by 25 percent in 1991, and by a further 11 percent in 1992 (see table 4.2). They have somewhat recovered more recently. Pensioners in Hungary have also experienced a 20 percent cumulative cut in real terms in their allowances, in the whole period. Polish pensioners seem instead to have been better shielded from inflation throughout the transition process: the average real pension in 1992 was roughly at 1986 levels.

V. EVIDENCE FROM OTHER COUNTRIES

How much can our interpretation of the evolution of the fiscal accounts in central eastern Europe be generalized to other former socialist economies? Data limitations here prevent a thorough analysis beyond what was shown in the previous sections, with perhaps the only exception of Bulgaria. For this country, the findings of a recent study by Bogetic and Hillman (1994) confirm, to a surprising extent, the validity of our results. Indeed, there is evidence that the net flow from the enterprise sector to the budget in Bulgaria has increased substantially after the beginning of market reforms in February 1991. In all other former socialist economies the budgetary accounting practices followed until recently, designed to meet the needs of central planning and to minimize the amount of information

revealed publicly, make it virtually impossible to reconstruct consolidated accounts prior to 1992. The radical change of accounting standards in Romania in that year, and the resulting break of consistency with previous years accounts, is a clear example. Le Houerou et al. (1994) effort to reconstruct the 1992 fiscal accounts of the Russian Republic has found that, after including off-budget government transactions, consolidated government spending amounted to more than twice the official budget expenditures. It is clear that no meaningful analytical work can be carried out using this kind of official data, and that any serious investigation should be preceded by a process of data reconstruction, which may not even be feasible. In addition, the more liberal use of the banking system as quasi-fiscal provider of financing, as well as the lack of autonomous investment decisions by enterprises, make it even more difficult to disentangle the web of relations between the budget and the enterprise sector in the other countries.

However, even in the absence of hard figures, we can suggest three *variants* on the description of public finance evolution seen above. As we see below, the analysis carried out in this paper turns out to be quite relevant, although in a different way, for a number of transition economies.

The first variant is that of a central-european-like behavior, that appears to have taken place in the case of Romania and, especially, Bulgaria. Here, the net contribution of the enterprise sector to the budget seems to have roughly remained constant or increased after reforms, while rapid increases in social expenditures contributed to a marked deterioration in public finances.

The second variant is that of Albania. Its case is rather unique, and the scope for applying our analysis is therefore limited. Albania is one of the few formerly socialist countries where the process of de-industrialization has proceeded so far as to fundamentally change the composition of output, and, as a consequence, to lead to a strong deterioration of public revenues beyond the disappearance of the duplication effect discussed above. The share of industry (which was entirely state-owned) in GDP has declined from over 40 percent in the late 1980s to 12 percent in 1993, the largest decline observed in reforming socialist economies. The reasons for this decline have been discussed elsewhere (see World Bank, 1994). Suffice it to say that the opening of the country made its industry, technologically obsolete by at least fifty years, non-viable overnight. Profit taxes have virtually disappeared. At the same time, the increase in social spending has also materialized, leading to a fiscal crisis of unprecedented dimension, which can only be sustained because of the large inflows of concessionary financing that the country continues to enjoy. In the medium-term, given in particular the sorry state of its tax administration, Albania is probably the former socialist country with the worst fiscal problem.

The last variant is the one that seems to be offered by Russia and some other of its former provinces (most notably the Ukraine, Belarus, and some of the Asian states). In these countries - although the situation is in a rapid state of flux - one could argue that the lack of decisive pursuit of economic reform has led to a fiscal crisis *despite* the lack of massive shifts out of the labor force, and the resulting lack of increase of social

expenditure. The continued subsidies to industry may have led to an initially lower emergence of open unemployment and to the lack of the massive shift into the pensioners' ranks observed elsewhere, but at the cost of delaying the emergence of the supply response that seems to have now take firmly hold in the central eastern European economies. Interestingly, available evidence suggest that in these countries the insufficient progress in the structural adjustment and resource reallocation process is typically accompanied by a negative net contribution of enterprises to the government budget, as predicted by our model. This seems to be the case of the Russian Republic in 1992, for example. Another example is Belarus, where the (negative) net flow from enterprises to the budget in 1992 has widened in 1993, along with the delays in the structural reforms.

CONCLUSIONS

The main message of this paper, namely that the fiscal crisis in central Europe was mainly attributable - in the early 1990s - to increasing social expenditures, rather than to the collapse in enterprise profitability, is not intended to minimize the importance of the continued reform of the tax system and of tax administration. In fact, the data on private sector participation in taxation in Poland that we provide in Barbone and Marchetti (1994) suggest that that sector is likely to be a less willing complier with the requirements of the fiscal system. To the extent that privatization advances, maintaining an adequate buoyancy for the tax system might become more problematic, unless tax reform continues with vigor.

The paper, however, also sends a cautionary warning regarding the possibility of financing further increases in expenditures. On a net basis, the decrease in revenues that has accompanied the economic transformation is limited. All three countries examined in this paper appear to already have levels of taxation that are higher than comparators at similar per-capita income levels, and approximate or surpass those of western Europe. While no iron law exists here, society at large may not be willing to provide the resources that would be required to support the current level of expenditures or to extend it even further.

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APPENDIX

First note that, given the production functions (1) and (2), in order for any pair of production levels (x*,y*) to be feasible, they need to satisfy

$$a_{xy}\, x^* < y^* \qquad \text{(A1)}$$

and

$$\sqrt[\alpha]{x}^* + \sqrt[\beta]{y}^* < L \qquad \text{(A2)}$$

where L is total labor available in the economy. The two terms in the left-hand-side of the disequality contained in (A2) refer to, respectively, the cost-minimizing amount of labor used to produce x* and y*.

After the some algebra, it is possible to derive the schedule of π_x and π_y as function of p (given x, y and w), as follows:

$$\pi_x = x - w\sqrt[\alpha]{x} - pa_{xy}\, x \qquad \text{(A3)}$$

and

$$\pi_y = py - w\sqrt[\beta]{y}. \qquad \text{(A4)}$$

It is also straightforward to derive the value of p_1 and p_2 - i.e., the values of p for which, respectively, π_y and π_x are equal to zero:

$$p_1 = wy^{\frac{1-\beta}{\beta}} \qquad \text{(A5)}$$

and

$$p_2 = \frac{1 - w\, x^{\frac{1-\alpha}{\alpha}}}{a_{xy}}. \qquad \text{(A6)}$$

Note that the only interesting case arises when $p_1 > p_2$ - that is, there is a price range for which both industries are profitable. In such case, it might exist some price vector which could support the given levels of x* and y* as a competitive equilibrium. In all other cases, x* and y* could not be part of a competitive equilibrium by any means.

In order for our model to be relevant, we therefore require that the parameter values satisfy:

$$\frac{1 - w\, x^{\frac{1-\alpha}{\alpha}}}{a_{xy}} > wy^{\frac{1-\beta}{\beta}}. \qquad \text{(A7)}$$

We now turn to the schedules of total profit tax revenues T and subsidy expenditure S as function of p (again, for given x, y and w). The algebraical expressions can be easily computed from equations (5) and (6), after due substitutions, and need not to be repeated here. It suffices to mention that the slope of both schedules varies over the domain, as shown in Figure 1. It can be checked that, in order for the tax revenues schedule to cross

over the subsidy outlays schedule, at some price greater than p_2 and lower than p_1, τ needs to satisfy:

$$\tau < \frac{a_{xy}\, x}{y}. \qquad \text{(A8)}$$

This is the last condition imposed on the parameters of the model. It assures that, when relative prices are very far from the market-oriented ones, subsidy outlays more than offset profit tax revenues, and the fiscal surplus turns into a deficit. In other words, it prevents the central planner in a socialist economy from enjoying an infinite fiscal surplus out of highly distorted relative prices - quite an unlikely occurrence, for the reasons mentioned above in the paper.

The following are the values of p_0 and p_3 - i.e., the values of p for which, holding (A8), the fiscal balance (tax revenues net of subsidy expenditure) is equal to zero:

$$p_0 = \frac{\tau w \sqrt[\alpha]{x} - \tau x + w \sqrt[\beta]{y}}{y - \tau\, a_{xy}\, x} \qquad \text{(A9)}$$

and

$$p_3 = \frac{x - \tau w \sqrt[\beta]{y} - w \sqrt[\alpha]{x}}{a_{xy}\, x - \tau y}. \qquad \text{(A10)}$$

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